eHealth strategy and implementation activities in Slovakia

Report in the framework of the eHealth ERA project

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About *eHealth ERA* and this report

This report is the outcome of research in the context of the eHealth ERA project (Towards the Establishment of a European Research Area). The project is implemented by empirica GmbH (co-ordinating partner, Germany), STAKES (Finland), CITTRU (Poland), ISC III (Spain), CNR (Italy) as well as EPSRC and Imperial College (United Kingdom), based on a Coordination Action contract with the European Commission.

The European Commission, Directorate General Information Society and Media, supports this project to contribute towards greater transparency across Member States and other participating countries on eHealth strategies as well as innovation-oriented research and technology development (RTD) initiatives, including the coordination of Member States' eHealth strategy formulation and implementation. Thereby the project aims at fostering the establishment of an effective European Research and innovation Area (ERA) in eHealth. All project results are available on the internet and can be accessed at the *eHealth ERA* website: www.ehealth-era.org.

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Country Report: *Slovakia*

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1 Executive Summary

The fundamental economic reforms undertaken in the Slovak Republic have also profound impact on the healthcare system. Within the context of healthcare system status, the potential of the information and communication technologies to improve quality of services is appreciated. The Ministry of Health is perceived as the principal stakeholder in ehealth area. The Ministry designated specific measures supporting progression and implementation of ehealth in Slovakia. The eHealth Roadmap and Action Plan was accepted in February 2006.

The National Health Information Centre (NHIC) became the advisory body in the area of ehealth for the Ministry of Health. Furthermore, the activities related to the ehealth carried out by the NHIC are supervised by the eHealth Committee. It is formed by the representatives of insurance companies, the Chamber of Physicians, the Association of Physicians, the Association of Pharmacists, the Chronic Patient Associations, the Slovak Healthcare Surveillance Authority, and the Association of Software Industries.

The Slovakian National eHealth Roadmap is composed from several key elements. The most important tasks enlisted in the Roadmap include development of the National Healthcare Information System, establishment of the national portal for professionals and citizens, establishment of the network of national healthcare providers, development of electronic multimedia health record, introduction of the citizen and professional electronic health/identification cards as well as the implementation of standards for the ICT use in healthcare.

The Action Plan for 2006 aimed to prepare implementation programs preceded by the feasibility studies. Established working groups in cooperation with researchers from three universities (the Comenius University, the Slovak Technical University and the Slovak Healthcare University), staff of the healthcare institutions and IT companies prepared documentation for this activities. The results of the assessment conducted throughout 2006 will become the basis for the preparation of the Action Plan for 2007.

2 Basic Facts

An area of Slovakia is 49,033 square km and its population 5.4 million inhabitants. Slovaks make 85.6% of the population. The main minorities include Hungarians (10.8%), Roma people (1.5%) and Czechs (1%). The country is divided into 8 self-governed territories. Bratislava is a capital of Slovakia. The country is a member of the European Union from May 1, 2004.

3 Healthcare System Overview

This section concentrates on the national health system as the backdrop and environment for e-Health RTD and implementation. The emphasis is on identifying factors with a critical impact on e-Health (such as the financing and organisational structure of the healthcare system), as well as those most likely to be affected by e-Health deployment.

3.1 Basic Facts and Features of the Healthcare System

The section on **basic facts and features of the healthcare system** makes particular reference to such aspects that are distinct for Slovakia and can, or already have an impact on the level of interest and progress achieved regarding e-Health.

3.1.1 The Main Decision Making Level for Health Care Policy in Slovakia

The main decision making level for health care policy in Slovakia is the Ministry of Health [3], [4], [5], [12]. The Ministry of Health remains the main state executive body responsible for health care and health protection. It proposes main directions and priorities of state health policy and prepares and submits draft legislation to the Government. Furthermore, the Ministry is responsible for monitoring of health care providers in order to assure equal access to health care services to everybody. The Ministry of Health is also responsible for the postgraduate education and secondary education of health professional; its responsibility covers also the recognition of diplomas and certificates for professional competencies obtained abroad.

From January 2002 (Act. No 416/2001 on Transfer of Competencies from state administration to self-governing regions and municipalities): decentralized powers to issue licences to health care providers from the Ministry of health to local territorial administration (self-governing regions).

The Health Care Surveillance Authority (HCSA) was founded by Act 581/2004 and its role was further defined in the related Acts 580/2004 and 576/2004, all of which became effective on January 1, 2005. HCSA was launched in February 2005, and has gradually begun to strengthen its capacity to carry out the regulatory functions. HCSA is headed by a

Chairperson, who is appointed by the Government at the proposal from the Ministry of Health. To help ensure independence, the Chairperson cannot be removed involuntarily prior to the completion of the five-year term, to a maximum of two terms in office, unless there is a proof of impropriety or is criminally indicted.

HCSA shares supervision of the healthcare system with the Ministry of Health (which is the chief regulator) and other license-issuing bodies responsible for specific areas of healthcare (e.g., professional organizations). The responsibilities of HCSA encompass a very broad spectrum of activities which can be categorized into five groups:

- Health insurance market-related activities, such as: issuing permits and licenses (e.g., HCSA issued permits for the operations of the five joint-stock health insurance companies currently operating in Slovakia);

- Healthcare provision-related activities;

- Healthcare purchasing-related activities;

- Trans-border healthcare provision and insurance-related activities; and

- General health care system enabling- and furtherance-related activities.

From 2003 only a small number of outpatient specialists, major regional and teaching hospitals and some specialized inpatient care providers have remained under state ownership with centralized management, others were passed to regional administration.

The Ministry of Health cooperates with the Ministry of Finance in the controlling process over health insurance companies; however from 2004 the main mechanism shaping the status of the health insurance in Slovakia is Financial Market Authority and the HCSA. The cooperation between these two ministries extends also to planning and execution of state expenditures on health care.[5] The Ministries of Defence, The Interior, Justice and Transport still own and manage directly their own health care facilities.[5]

3.1.2 The Main Healthcare Service Delivery Systems in Slovakia

The healthcare service delivery system in Slovakia was formed by about 9000 outpatient care facilities in the year 2003. Institutional healthcare was delivered in 89 hospitals, 17 high level specialised medical institutions, 20 special medical institutes and 16 health resorts. There were 1004 dental practices and 963 pharmacies in Slovakia.

Until 2001 nearly all hospitals and many outpatient specialist facilities belonged to the Ministry of Health. Then the ownership of most hospitals and outpatient clinics for secondary care was moved to self-governing municipalities and higher territorial units at regional level. Other polyclinics and hospitals were sold to private providers or transformed into non-for-profit

entities with public benefit status. More than 90% of primary outpatients' facilities and 50% of specialised outpatient facilities is private.[4] In 2002 the expenditures for health care in Slovakia were equal 5.7% of GDP. Per capita adjusted for purchasing power (PPP) the country spent US $ 698 in 2002.

Primary health care includes in general all first contact outpatient care providers focusing on preventive or/and curative activities (general practitioners for adults, general practitioners for children and adolescents, gynaecologist-obstetricians and dentists). Residents of Slovakia may change their primary care physician every 6 months.

Primary care physicians carry out basic examinations, interventions and treatment but they are not allowed to proceed with some specialized procedures or prescribe some drugs (then they should send the patient to specialists). The responsibilities of the primary health care providers are defined in the strategy documents adopted by the Ministry of Health. Generally, all primary care physicians play the role of gatekeepers who issue the referrals to specialist out – or inpatient care providers. Patients may refer themselves to some specialist e.g. ophthalmologists.

Inpatient care is assured by 137 facilities. Hospitals are divided according to their referential level into 5 groups with 4 grades for teaching hospitals. There is a trend of increasing the number of highly specialised hospitals.

The systemic measures were adopted to create a new system of health care in Slovakia and lock in the desired state of the reform by enacting legislation to this effect. New five Acts suggested and discussed in Parliament in 2004 constitute the interdependent pieces of the Health Reform and provide the legislative support for changes in financing, delivery and organization of health services. The legislative package was enacted by the Parliament in January 2005 and amended six months later in an effort to "fine tune" the original acts. Rights and duties of healthcare providers are governed primarily by the following legislation:

- Act No. 576/2004 Col. of laws, on healthcare, services related to healthcare providing and on alterations and amendments of certain acts
- Act No. 577/2004 Col. of laws, on volume of healthcare reimbursed on the basis of public health insurance and on reimbursements of services related to the healthcare providing,
- Act No. 578/2004 Col. of laws, on healthcare providers, employees in healthcare sector, professional organizations in healthcare sector and on alterations and amendments of certain acts,
- Act No. 579/2004 Col. of laws, on emergency care and on alterations and amendments of certain acts,

- Act No. 581/2004 on insurance companies, supervision over healthcare and on alterations and amendments of certain acts.

3.2 National Level Health Goals

The main national level health goal is to continue in the course of the health sector reforms in the Slovak Republic. The fundamentals of the reform were the strong belief in the market and an unshakable faith in market solutions for the major problems of the health sector. There is an implicit expectation in the reform design that competition in the health market would lead to improvement in quality and moderation of prices, and thus serve interests of the consumers. Market forces are expected to contain costs by weeding out the inefficient producers and adjusting the volume of services in line with demand. Giving the consumers choice of both insurers and producers is expected to tilt the power balance in favour of consumers, who would then be empowered to make informed decisions and bargain for the desired price and quality of health services. The responsibility for quality control of providers is retained in the state apparatus. In order to temper the unfavourable effects of competition, legislation is enacted to enable strict regulation and regular surveillance of all the key players in the system.[5] The information on national health policies as well as the Ministry of Health website in Slovak only.[13]

4 Strategic eHealth Plans/Policy Measures

4.1 National-Regional eHealth Policy

4.1.1 Main Actors

The key role in definition of ehealth policies is on the side of the Ministry of Health. Other bodies which could be relevant for this tasks include the Ministry of Transport, Posts, and Telecommunications of Slovakia and The Government Commissioner for Information Society.[7]

4.1.2 eHealth Roadmap: Background, Targets, Progress, Prospects

"Slovak National e-Health Strategy" and "The e-Health Action Plan for the year 2006" were passed at February 2, 2006 by the Board of the Ministry of Health. Policies revealed in documents focused on information society in general also contain some elements relevant to e-Health domain [7][17]:

- Document "Information Policy in Slovakia" approved by the Government on June 13th, 2001: declaration about joining the initiative eEUROPE+ [9]

- Document "Strategy for Building an Information Society" approved by the Slovak Government on January 21st, 2004; the Government gave necessary resources for the development of information society and for the implementation of the Action Plan in 2004 [14]

The Action Plan comes from the initiatives eEUROPE 2002, eEUROPE+ and eEUROPE 2005. The body having the main responsibility for drafting the (latest) national (and regional) e-Health roadmap is National Health Information Centre.

Both "Slovak National e-Health Strategy" and "The e-Health Action Plan for the year 2006" were made public on February 2, 2006.

The main strategic targets stated in the national and regional e-Health roadmap are:

- Support in creating an e-Health environment by supporting standardization, interoperability, ICT infrastructure, data confidentiality and security.
- Starting the work on EHR, e-Prescription and distant health care services in the form of feasibility studies which will later on (2007-2010) continue in the form of large scale projects

It started with public announcement of the documents on e-Health strategy in Slovakia (February 2006). Action plan for the year 2006 has defined 15 tasks which will be evaluated to the end of the year and then the fulfilment of milestones of the roadmap will be reviewed.

The tasks and activities envisaged in the National eHealth Strategy included:

- development of the National Healthcare Information System
- healthcare related national portal for both professionals and public
- network of national healthcare providers
- citizen and professional electronic health/identification cards
- Electronic Multimedia Health Record aiming at optimal clinical pathways deployment
- telemedicine and independent living
- *e*Prescription/Medication aiming at DSS employment and maintenance of patient medication records history
- ICT supported home health and social care systems
- knowledge based advisory and decision support (expert) systems for GPs, clinicians, and management
- development and introduction of systems to acquire and accumulate relevant high quality health related data to support disease prevention measures, and to improve information for decision support in relation to public health

- introduction of systems for assessment and control of clinical practices, safety, and quality
- certification of clinical guidelines
- application of ICT and healthcare related standards and specifications
- establishment of university level education in health and medical informatics

The roadmap "implementation chain" – the main "players" expected to participate:

- The Board for Informatics of the Ministry of Health
- National e-Health Commission
- National Health Information Centre (NHIC)
- e-Health Competence Centre (at NHIC)
- e-Health working Groups (so far for Standards, EHR, e-Prescription, Education in Health Informatics, ICT infrastructure)
- Health care providers

There are no preliminary plans or experiences in extending ehealth implementation to the field of social care. The cooperation between Slovakia and Czech Republic was established in the field of standardization, information system development cooperation and ehealth application coordination.

4.1.3 Dissemination and Co-ordination Activities

The activities that have been launched for making the national ehealth roadmap more widely known include: national conference on Slovak e-Health National Strategy, the publication of the strategy in the Internet and in the popular weekly magazine of health care professional (Zdravotnícke noviny – Health Care Journal) as a special supplement.

The coordination of dissemination activities was carried out by the Ministry of Health and the National Health Information Centre (NHIC). So far there have been no dissemination activities concerning the ehealth roadmap through alternative media channels neither activities targeted specifically to general public. Means available to the general public for expressing their opinions on e-Health policies and plans were not identified.

4.2 Investment and Reimbursement Framework

Investment for hardware and software for implementation of e-Health systems and applications is supported or funded. The ehealth investments in Slovakia were funded from the loan from World Bank, PHARE Program and Structural Funds. The loan from World Bank covered two projects: Health Information Standards and National Health Information Data Centre.[1] [18]

Some financing paths are available for hardware and software for health care. No ehealth services were eligible for reimbursement in Slovakia. eHealth services are usually reimbursed through private agreements.

5 eHealth Deployment Status

5.1 eHealth Infrastructure

5.1.1 Physical Networks

No specific physical network is available for e-Health services – Slovakia has no dedicated healthcare network. Nevertheless Slovakia has plans for years 2007 to 2010 to establish healthcare network with the help of Europe Development Fund (EUDF). No e-Health services are delivered through regional or national networks. No relevant was information found about other plans for future development and expansion of e-Health networks. The feasibility studies only, on possibilities and sources for stimulating the development and usage of e-Health networks were started in 2006. There is no information about any success stories where progress was achieved with regard to the implementation and use of networks for e-Health purposes in Slovakia.

5.1.2 Legal and Regulatory Framework – Overview and Discussion

There is national legislation in Slovakia addressing the issues of data protection, telecommunications (with regard to data protection and confidentiality) and digital signatures. Relevant acts to these domains include:

- Coll. On Protection of Personal Data amended by Act 90/2005 [2]
- Telecom Act No. 195/2000 amended in October 2000 by Act No. 308/2000
- Act No. 215/2002 Coll. on Electronic Signatures

The relevant national body that have the responsibility of overseeing and/or co-ordinating the development and enforcement of the legal and regulatory requirements for the areas discussed here is are Office for Personal Data Protection and Telecommunications Office (regulatory body for technical and price regulation).

National legislation on the targeted areas (Protection Directive and Directive on Electronic Signatures) has been harmonized to the EU-level through following legislation:

- Law on the Legal Protection of Personal Data, 1996, amended on 17 July 2000 and then again on 21 January 2003

- Law on electronic signature (July 11, 2000. No. VIII – 1822, amended as of June 6, 2002, No. IX – 934)

- The Law on Electronic Communications of 15 April 2004

In recent EC reports, the recommendations for the improvement and harmonization of telecommunication legislation with UE standards were made.

5.1.3 Education and Training on ICT – Overview and Discussion

Activities planned in the range of the information society promotion in Slovakia in 2006 encompass:

- introduction of the subject of "work with the computer" from the 6th year of primary school,

- training for teachers focused on the use of ICT in the teaching process,

- creation of ICT classes using the ICT environment in instruction interactively,

- preparation of the Information Society Strategy for Regional Education in Slovakia [15].

There are education programmes available on the national or regional level to promote the acquisition of necessary general ICT skills by the citizens in Slovakia. There are also education programmes available promoting the acquisition of necessary ICT skills by health care administrative and support staff.

The initiatives related to the introduction of medical informatics education on the university level were undertaken by Slovak Medical University (Medical Informatics Department). There is dedicated curriculum for physicians in the University as part of post-gradual education. Medical Informatics department is responsible for the organisation of these education programme and provision of training.

5.2 eHealth Applications and Services

The topics of Electronic Health Records and e-Prescription were signalled as important areas within national policies to be considered for feasibility studies or pilot implementations. In the context of Electronic Multimedia Health Record the use of SNOMED-CT nomenclature and ontology-based concept representation is considered in order to achieve in future optimal clinical pathways deployment. The feasibility studies on EHR were planned for 2006 within national e-Health strategy and then they were supposed to be continued in the form of large scale projects in years 2007-2010. The feasibility studies on EHR and e-Prescription in progress

Furthermore, several feasibility studies have been carried out in the area of health cards. Currently, the inquiries on the possible financial sources are continued. The Health Portal is in

development as a task on the list of the e-Health Action Plan for the year 2006. Risk Management and patient safety is covered mainly by the work carried out in the field of standardization. There are also activities on patient identifier which could replace existing citizen license number. They are supervised by the Ministry of Interior.

Currently, no ongoing activities in the areas of personal wearable and portable communicable systems as well as in feasibility studies on distant health care services related to the plans included in the National e-Health Strategy have been identified.

5.3 Interoperability and Standards

5.3.1 Technical Interoperability

The Health Informatics Standards Department was established in the NHIC. It is in charge of supporting health informatics standards framework. The Department is also responsible for cooperation with international activities and bodies (ISO, CEN (TC215, TC 251), HL7, Euro Rec, goodEHR).

The decision on the use of healthcare coding and classification systems are taken so called "Catalogue Commission" as an advisory body of the Minister of Health. There are no standards obligatory to use. The general trend and future plans concerning the adoption and implementation of technical health ICT standards in Slovakia are related to HL7. The first activities in this context include mainly first exploratory studies for its introduction to healthcare system.

5.3.2 Semantic Interoperability

There are some considerations about SNOMED in the work on EHR feasibility studies. The following coding and classification systems are in use in health ICT applications on the national level: ICD-10, NCSP, CPT, SNOLAMED (Slovak classification for bio and hem labs). These applications are used in hospital care, ambulatory care, laboratory tests. The Ministry of Health, in cooperation with Catalogue Commission and NCZI, is in charge of the whole process of the coding systems implementation in healthcare.

5.3.3 Interoperability of Electronic Patient/Health Records

There is no common EHR architecture available and/or in use on a regional and/or national level in Slovakia. No interoperability standards were established in the area HER.

5.3.4 Accreditation Procedures

Currently, no form of conformity testing or accreditation scheme for e-Health systems and applications in Slovakia.

6 eHealth RTD status

The main actors in RTD policy setting in Slovakia are:

- Ministry of Education of Slovakia [8]

- Slovak Academy of Science [11]. Slovak Academy of Sciences is a scientific and research institution fostering basic and strategic basic research; its primary mission is to acquire new knowledge of nature, society and technology, specifically targeted at ensuring scientific basis for the advancement in Slovakia. It comprises 58 scientific institutes and 13 ancillary institutions. The SAS edits 44 scientific and scholarly journals and 100-120 monographs per annum. Moreover, 41 scientific and scholarly societies, which associate scientists and scholars from various disciplines, are affiliated with SAS [6], [10]

- The Slovak Republic Government Board for Science and Technology [16]. Advisory organ of the Slovak Republic Government for preparation and execution of the state-governed policy for science and technology related to economic, social and cultural development of the Slovak Republic. Established by restructuring of the Agency for Support of Science and Technology in the Slovak Republic. It is a state-governed budgetary organization with the aim of financial support for science and technology in accordance with the state policy for science and technology in the Slovak Republic

The main groups directly involved/undertaking RTD activities in Slovakia are Slovak Academy of Science Institutes [11] and Universities. The main focus area and target of RTD activities in Slovakia is concept of the state-governed scientific and technological policy up to the year 2005 (approved by government resolution No. 724/2000 and by resolution of the National Assembly of the Slovak Republic No. 1228/2000) (in Slovak).[10] The major national and regional funding source and agency in Slovakia is Agency for Support of Science and Technology in the Slovak Republic. No RTD funding for e-Health activities has been identified so far.

The major research programmes relevant for the ehealth field is priority: Information and Communication Technologies.
The are some initiative (Slovak Centre of Scientific and Technical Information) or national level to promote and support technology transfer in the area of ehealth and related fields.[12]

No national-ownership companies or international ownership companies are active in the area of e-Health and related RTD were identified.

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